U. S. DEPARTMENT OF AGRICULTURE
Forest Service

FOREST PEST LEAFLET 23
June 1958

The Texas Leaf-Cutting Ant

By Wm. H. Bennett, forest entomologist, Southern Forest Experiment Station

The Texas leaf-cutting ant or town ant (*Atta texana* Buckley) is a serious pest of pine seedlings in east Texas and west-central Louisiana. It is not known to occur in other forested areas of the South. The colonies or towns, which are usually confined to well-drained, deep sandy soils, are made up of conspicuous surface mounds and extensive underground passageways.

The ants remove needles, buds, and sometimes bark from natural and planted pine seedlings of all species. Where these ants are abundant they make it impossible to establish natural reproduction. When infested areas are planted, the young seedlings are often destroyed within a few days, unless the colonies are eradicated before planting is done.

The ants are also well known as defoliators of orchard trees and cereal and forage crops. They use the foliage from a wide variety of plants but tend to concentrate on pines during the winter, when other green material is scarce. They do not eat the foliage but cut it into small fragments that they carry into their underground chambers. There this material serves as a medium upon which they culture a fungus that is their only known food.

Description

Leaf-cutting ants are rusty red in color, and live in colonies made up of a variety of individuals (fig. 1). The queen, approximately ¾ inch long, is the reproductive center of the colony and lives in a chamber below ground. She lays pearly-white eggs, about half the size of a pinhead, which develop into cream-colored larvae and pupae, ¼ to ½ inch long. Most of the pupae transform into worker ants, sterile females that vary in form and range from ¼ to ½ inch in length. The workers care for the young, tend the fungus gardens, cut and transport leaf fragments, and defend the colony.

Figure 1.—The various castes and sizes found in a nest of *Atta texana*. A mated queen, taken during the winter, is at the center, a virgin queen at upper right, and a male at upper left. The workers are shown without attempt to differentiate the castes.

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Life History and Habits

In May and June, winged males and females develop, fly from the colony, and mate. After mating, the females lose their wings, establish nests beneath the soil, and become the queens of new colonies. Individual colonies may exist for years and continue to increase in size.

The nest area is usually marked by innumerable crescent-shaped mounds, about 5 to 14 inches in height and approximately a foot in diameter. Each mound surrounds an entrance hole (fig. 2). The mounds may be confined to an area of less than 100 square feet, or may occur over an acre or more, depending upon the age of the colony. In heavily infested areas it is sometimes difficult to determine where one colony ends and another begins.

Nests may extend 10 to 20 feet below ground. They consist of many hemispherical cavities, having an average capacity of about one gallon (fig. 3).

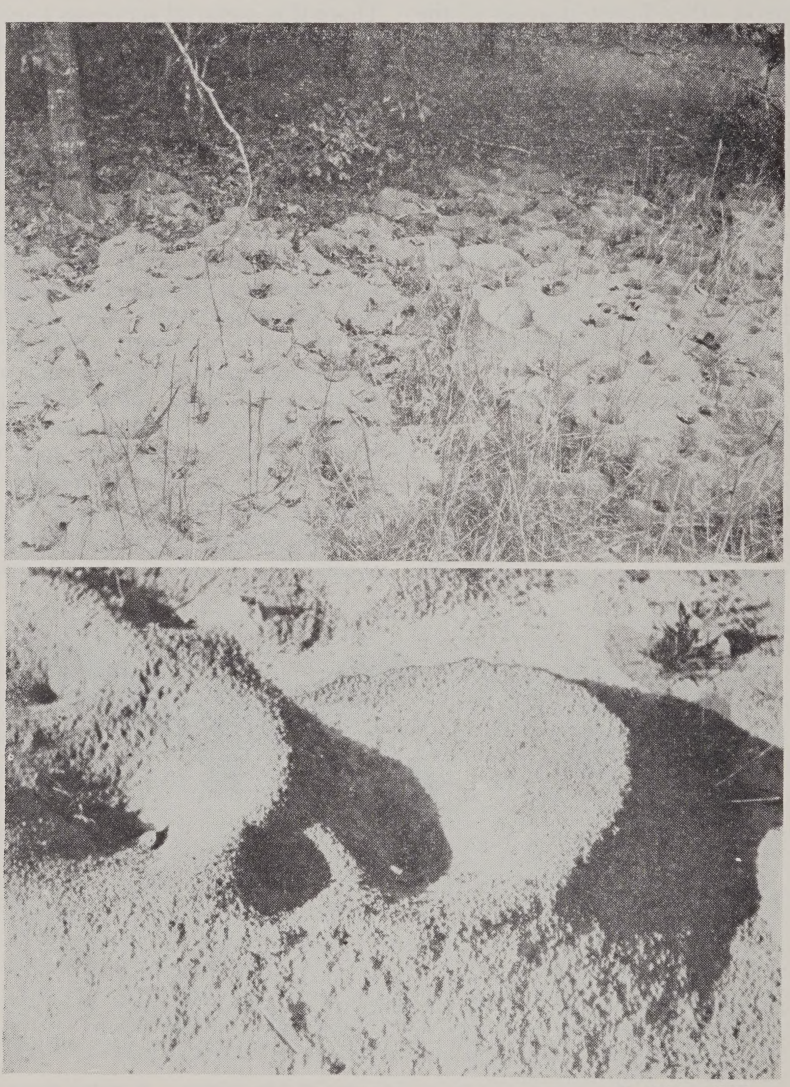

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Figure 2.—*Top:* Nest areas are marked by innumerable crescent-shaped mounds. *Bottom:* Closeup of mounds.

Figure 3.—A cut through the center of a nest of the Texas leaf-cutting ant. The nest at this point is 8 feet deep.

These cavities are connected by narrow tunnels and are occupied by ants and stored materials. Vertical tunnels extend to the mound openings and lateral foraging tunnels lead outwards, sometimes a hundred yards or more, to enlarged openings or "feeder holes" at the surface.

The activity of the ants above ground depends largely on the temperature. In hot summer weather they remain quiescent during the day but begin to forage with the approach of dusk and lower temperatures, and continue through the night. During the cooler months they forage during the day and are especially active on sunny days at temperatures of 50° to 80° F. Most of their mound building is also done during cool parts of the year. They are inactive on cold, wet, or cloudy days, especially in the morning.

Above ground the ants clear sharply defined foraging trails that resemble miniature highways and sometimes extend hundreds of feet to the plants under attack. They move in procession and carry fragments of needles or other plant material to the nest. Each fragment is several times the size of the ant carrying it and is borne upright over the head like a parasol. At the entrance to the feeder hole, the fragments are chewed into smaller pieces and then stored in underground chambers. Specialized workers carefully tend the fungus garden and permit only one kind of fungus to develop upon the macerated leaves.

Control

Natural.—Almost nothing is known of the natural control of the Texas leaf-cutting ant.

Artificial.—Considerable relief from leaf-cutting ant damage can be obtained through direct control measures. In order for these measures to be most effective, however, it is highly important that all of the ant colonies in a given vicinity be located and treated; otherwise, untreated colonies will remain as a source of reinfestation of treated areas, and of future loss. Colonies can be located most easily during late fall or early winter, when the ants are most active and their mounds and trails are not so well hidden as in spring and summer.

The Texas leaf-cutting ant can usually be controlled by fumigation with methyl bromide, a gas liquefied under pressure and available in convenient one-pound cans. The gas is heavier than air, nonflammable, and when liquefied has a boiling point of 40° F. Its vapors are highly toxic to humans, however, and must not be inhaled.

Methyl bromide is applied through a section of flexible tubing (fig. 4) that is worked into one or more of the central holes in a colony to a depth of about 2 feet before the gas is discharged. If

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Figure 4.—Methyl bromide gas being applied to the central part of a colony during the winter.

the colony is on a pronounced slope, however, the highest opening is used so that the gas can flow through the tunnels below.

One pound of methyl bromide is usually enough to control the ants in a colony of average size. Smaller amounts may suffice for small colonies. Two or three pounds may be required, however, in very porous soils or for colonies covering more than one acre. Many failures are due to use of too little chemical.

Treatment is most effective on cold (40° to 50° F.), cloudy, or rainy mornings during the winter, when the ants are inactive and gathered around the queen or queens near the center of the colony. Results are best when the soil is moist or wet. Methyl bromide has not given satisfactory control during the warmer months.

Several weeks after treatment the towns should be examined for possible survival in some colonies. If the weather is still cold, the remnants may be dispatched with a second application of methyl bromide. Where only occasional mounds show activity, 2 percent dieldrin dust or 10 percent chlordane dust will serve if carefully sprinkled into all active mounds and feeder holes.

CAUTION: Dieldrin and chlordane are poisons. Read and follow carefully all directions given on the container. Do not store methyl bromide in buildings where people live or work, and do not inhale the gas. Methyl bromide is especially dangerous in hot weather. It is best to use a preparation containing a small amount of chloropicrin (tear gas) to serve as a warning agent, since methyl bromide alone has very little odor.

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U. S. GOVERNMENT PRINTING OFFICE: 1958

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